UTAH GEOLOGICAL & MINERALOGICAL SURVEY

QUARTERLY REVIEW

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GREAT SALT LAKE

Level On Rise

In 1850, the first year the U. S. Geological Survey recorded the level of Great Salt Lake, GSL had an elevation of 4,201 feet above sea level.[1] It fluctuated to 4,204.75 feet midyear of 1855 and dropped to 4,199.5 feet toward the latter part of 1860.

With highs and lows varying about one foot, the lake steadily rose to attain its greatest recorded height of 4,211.75 feet in the summer of 1873.

From 4,195.85 feet in the winter of 1905, the lake experienced an upward trend to 4,205 feet in the spring of 1924 only to decline to 4,193.8 feet in the winter of 1940.

In the winter of 1963 when it receded to a record low of 4,191.5 feet, many predicted the end of the lake. But since that low, the lake has recovered. Last year it reached a high of 4,198.10 feet and receded only one foot; again, early in the winter season, it was on the rise.

If the trend continues, the lake may reach a record high this year.

[1]Figures and graph from E. L. Peck, 1966, Hydrology and climatology of Great Salt Lake, *in* The Great Salt Lake: Utah Geol. Soc. Guidebook to the geology of Utah, no. 20, p. 121-135. Updated by UGMS.

MOAB DEPOSITS SUPPLY POTASH

Prior to World War I, Germany was the only source of potash for the United States. Once the Carlsbad, New Mexico, deposits were developed for potash, our dependence on foreign sources was diminished.

In 1960, when production from the Carlsbad mines was declining, the federal government assisted in the development of Texas Gulf's multi-million dollar potash project in southeastern Utah by arranging for withdrawal of the mine area from oil and gas leasing.

During the construction of its Moab, Utah, facilities, Texas Gulf traded its Bartlett Point lands to the State to accommodate State Park expansion. Scenic Bartlett Point, which was to have been the plant's railroad terminal, was exchanged for the less elevated Gold Bar lands which in turn were exchanged for some of the lands comprising the present mine complex. Serving not only the mine but also the valley are 28 miles of railroad and a highway which was awarded a national prize for its beauty.

Architects designed the plant – its colors and layout – to blend unobtrusively with the rich colors and textures of the landscape. Bates C. Wilson, Canyonlands Superintendent and State Coordinator for the National Park Service, commented in 1966:

> Unlike most mining companies, Texas Gulf's management appreciated the natural beauty which surrounded the potash mine. When building, they made it a point to blend the plant structures with their surroundings. It was an approach that I haven't encountered elsewhere. Park service officials who visit our area usually comment on this.

The first potash mining by Texas Gulf was underground. Last year, however, extensive folded strata necessitated a switch to solution mining, a process whereby the potash is dissolved out of the mine and allowed to recrystallize in evaporation ponds. These self-contained ponds emit no liquid or gaseous wastes. Some environmentalists have objected to the ponds, but others have observed that their appearance as terraces matching the natural contours of the land actually add interest to the Canyonlands scenery.

Governor Rampton has commented that the operation of the mine makes an important contribution to the economy and the tax base of Moab and Grand county. In the five years preceding 1971, the operation at Moab paid out approximately $1.3 million in property and state taxes, $2.4 million for utilities

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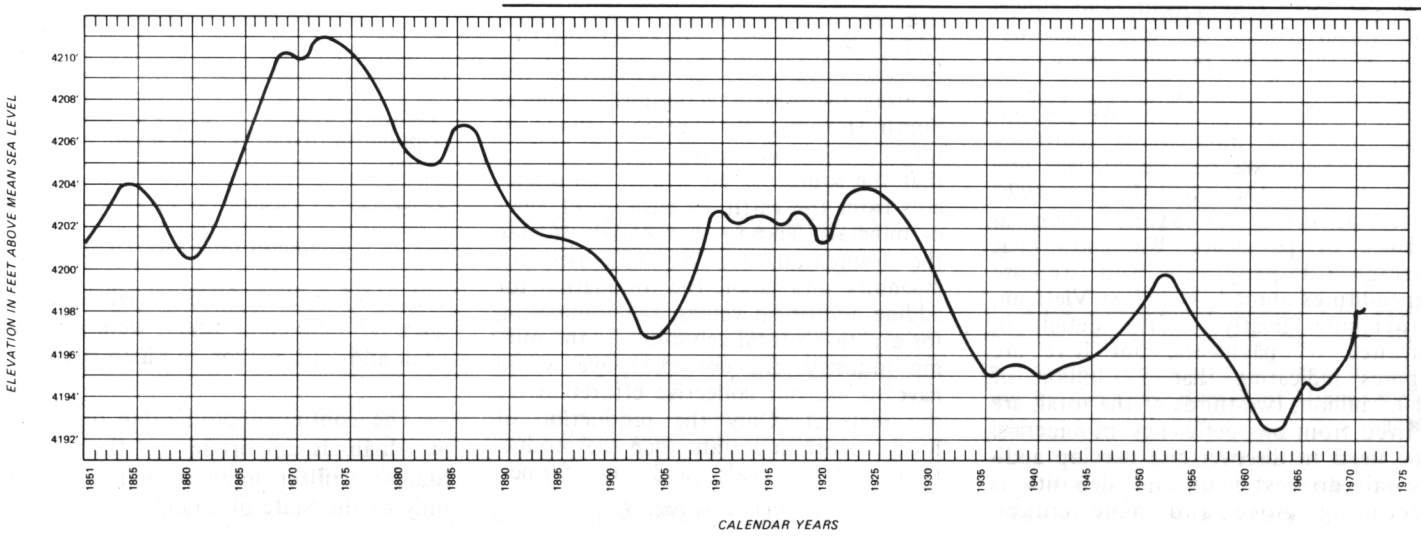

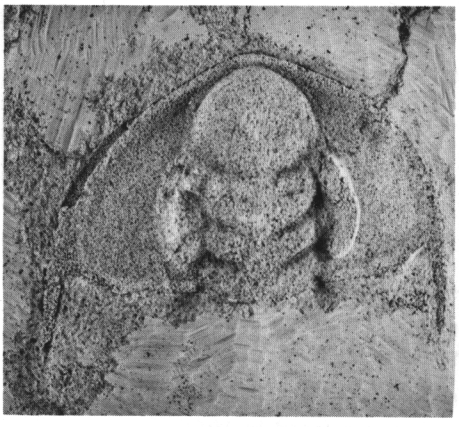

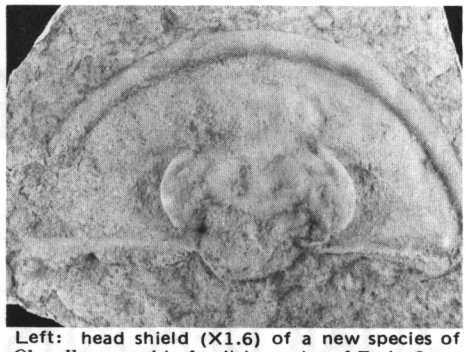

Left: head shield (X1.6) of a new species of *Olenellus*, a guide fossil to rocks of Early Cambrian age. Above: large head (X0.9) of a new species of the trilobite *Wanneria*. Entire animal would have been approximately 6 inches long.

WGMAC REPORT: PART II

Note: The following report of the Western Governor's Mining Advisory Council was made to the Western Governor's Conference by A. C. Harding, WGMAC chairman, on July 14, 1971, at Jackson Lake Lodge. It will be presented in the *Quarterly Review* in three parts. Reprinted by permission.

Future Mineral Requirements

Making present problems more serious are predictions about the future. We are nationally concerned about population growth, but in the past 100 years our mineral consumption increased ten times faster than population. In the next 30 years or so, when population is expected to double, energy and mineral requirements are expected to triple and quadruple. We are far from being self sufficient in minerals now, sufficient only in one metal, molybdenum, and in several nonmetallics, including coal. A table listing import percentages of certain mineral commodities is appended hereto. Even gold, still a necessary component of reserves in international monetary structures, is in short supply for that purpose and others. Our domestic production of gold is only half of the amount needed just for defense and space industry requirements and equals only one-fourth of our total consumption. We currently produce about $25 billion of all primary minerals and consume $32 billion a year. We are told that the 1971 international currency crisis, depreciating our dollar, was due to several factors, including a 1970 national deficit of $10.7 billion in balance of payments. We know that foreign-aid programs and defense expenditures abroad, including Vietnam, contribute greatly to the deficit in balance of payments, but here are figures indicating that $7 billion of $10.7 billion, two-thirds of the total, are derived from our deficiency in minerals. The need to discover and develop additional domestic mineral deposits is becoming more and more critical. Clearly, within our proposals to improve the environment, we need not to curtail mining production, but to expand our minerals and energy technologies, and to cultivate our mineral potential for greater production.

General Economics

The real source of any country's annual income and accumulated wealth is its productive resources, and a country's mines are among its greatest resources. It has long been acknowledged that a nation which has no mines has to try to share in the wealth of nations which do by establishing a favorable balance of trade.

Two hundred years ago, Adam Smith took issue with French economists who said that all wealth originated only with the proprietors and laborers of the land, that manufacturers and merchants added nothing because they added only a value equal to what they consumed in so doing. Smith did write that the theory was "the nearest approximation to the truth that has yet been published on the subject of political economy," and elsewhere he wrote that the most productive use for capital was in "lands, mines, and fisheries." That doctrine of the French Physiocrats is considered too limiting by present economists, even as Smith thought, but we are inclined to forget the fundamental economic fact that the source of all wealth still originates from the earth, as basic food, fiber or minerals. Those raw materials provide the foundation for man's subsequent ingenuity and labor, the foundation for adding additional values, the foundation for a nation's total economy. If the mining industry did not exist, we would have to use our collective efforts to try to create it. Only the production of food is more important than the production of minerals, and any farmer,

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Oldest Utah Fossil Described

The oldest metazoan fossils known from Utah are described by R. A. Robison and L. F. Hintze in "An Early Cambrian trilobite faunule from Utah." The paper will appear in *Geology Studies*, a serial published by Brigham Young University. With the exception of possible algal stromatolites, which are undescribed, these are the oldest fossils thus far positively identified in Utah.

Representatives of the trilobite genera *Olenellus, Wanneria, Bonnia* and *Onchocephalus* are described from the Pioche Formation of late Early Cambrian age in the House Range of western Millard County. The trilobites were discovered in interbedded shale and quartzite apparantly representative of littoral and shoreface environments that developed as seas spread across the area that is now Utah at the beginning of the Paleozoic Era.

UGMS SPECIALIST REVIEWS LAWS

Representatives of oil and gas commissions and state governors held their 1971 annual meeting in Biloxi, Mississippi, on December 5, 6 and 7. UGMS's mineral specialist, Carlton Stowe, attended the meeting along with members of the Oil & Gas Conservation Commission as guests of Governor Rampton.

Stowe participated as a resolutions member on the Public Lands Committee to review federal legislation concerning leasing laws and drilling permit stipulations.

Current figures show 97 percent of the carbon monoxide along the Wasatch Front, where 79.4 percent of Utah's population lives, is the result of automobiles.

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and $16.5 million for materials and supplies, $7 million of which were spent in Utah and $2.1 million in Moab itself.

The continued production of potash at Moab is important to the United States fertilizer industry and the economy of the State of Utah.

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without the products of the mineral industry, would have difficulty supplying even the needs of his own family.

National Wealth

National income has been likened to an annual stream which flows into and through the pool of national wealth, where some of it accumulates for the benefit of future generations. It is not just this year's mineral production which contributes to our present high standard of living, but all the mineral production compounded through the years of our history. This generation's homes, highways, hospitals and schools are available today partly because of the capital generated by the mining camps of yesteryears, in the Mother Lode country, the Klondike, at the Comstock, Tombstone, Goldfield, Leadville, Cripple Creek and a thousand others, most of them less glamorous and less productive, but contributors to today's standard of living.

Keynes

In support, let us quote some writing of the "Messiah" of today's economists, John Maynard Keynes. He determined that the era which initiated tremendous increases in standards of living for civilized man began in the sixteenth century, with accumulation of capital from gold and silver mined in the New World and brought to the Old. Without dwelling on morality, it is only incidental that the gold and silver he will specifically describe was not mined by the English, who reaped the benefit, but was stolen by them from Spaniards, who stole it from Incas and Aztecs, who may well have stolen some of it from other Indians, who did the mining. Keynes wrote this in 1930:

> The value of Great Britain's foreign investments today is estimated at about 4 Billion Pounds. This yields us an income at the rate of about 6½ percent. Half of this we bring home and enjoy; the other half, namely, 3¼ percent, we leave to accumulate abroad at compound interest. Something of this sort has now been going on for about 350 years. For I trace the beginnings of British foreign investment to the treasure which Drake stole from Spain in 1580. In that year he returned to England bringing with him the prodigious spoils of the 'Golden Hind'. Queen Elizabeth was a considerable shareholder in the syndicate which had financed the expedition. Out of her share she paid off the whole of England's foreign debt, balanced her Budget, and found herself with about 40,000 Pounds in hand. This she invested in the Levant Company—which prospered. Out of the profits of the Levant Company, the East India Company was founded; and the profits of this great enterprise were the foundation of England's subsequent foreign investment. Now it happens that 40,000 Pounds accumulating at 3¼ percent compound interest approximately

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This brushy badland area in sec. 13, T. 10 S., R. 24 E., Uintah County, is the proposed site of the first of three core holes to be drilled under the new federal oil shale leasing program in Utah. Gulf Mineral Resources has applied for permission to drill and core to 1,250 feet at this location. Two other informational core holes also are proposed by Gulf in the same general oil shale area (photo courtesy U. S. Geological Survey).

Gas Wells To Reopen

Gas wells in Grand County, some shut-in for more than 20 years, will begin producing gas in 1972 upon completion of a pipeline and gathering system connecting the Cisco Dome field and other wells to the Pacific Northwest Pipeline. The project costing about $600,000 will consist of 42 miles of 2½-, 4- and 6-inch lines designed to gather and deliver 6 million cubic feet of gas per day.

Cisco Dome field was discovered in 1925 and produced 3.1 billion cubic feet of gas from Dakota Formation sandstones, mostly for carbon black manufacture. Production ceased in the early 1930's and except for sporadic drilling in the 1950's, little exploration has occurred in the area since.

The project was initiated by Tejas Gas Corporation, Corpus Christi, Texas. A Utah corporation, Grand Gas Corporation, was created to construct and operate the system.

'Big' Oil Predicted

In a recent interview with *World Oil* magazine, Howard R. Ritzma, UGMS petroleum geologist, discussed the significant discoveries in the basal Green River and Wasatch sandstones of Tertiary age along a 35-mile long trend in the Uinta Basin, northeastern Utah.

According to Ritzma, "...this new trend is much more important than the giant Red Wash trend to the east... (and) holds Utah's first promise of 'big' oil – 1,000 bopd wells are commonplace."

Ritzma predicted a continuing campaign of deep exploratory drilling in the 15,000- to 20,000-foot range to the Green River and Wasatch formations and deeper drilling to come as companies explore potential oil and gas reservoirs in the basin below the Wasatch.

More Cores In Library

The UGMS Sample Library recently received the complete cores cut by Western Oil Shale Corp. in their No. 1-EX core hole, SW SE sec. 36, T. 9 S., R. 20 E., Uintah County. The cores include the entire oil shale-bearing part of the Green River Formation beginning at 1,767 feet and extending to 2,969 feet.

The No. 1-EX core hole was conceived as the site of a nuclear detonation to create a chamber for experimental *in situ* retorting of oil shale (*Quarterly Review,* August 1969). The project has been abandoned.

CER Geonuclear Corp., Las Vegas, Nevada, made the cores available. They are sawed in two, one-half used in assaying by the U. S. Bureau of Mines laboratories, Laramie, Wyoming. The UGMS share of the cores, weighing about one and a half tons, will be available for study in the Sample Library.

MINERAL PRODUCTION IN UTAH BY COUNTY, 1970-1971

by Carlton H. Stowe, Mineral Information Specialist, UGMS

Summary

Rising for the third successive year, mineral production in Utah for 1970 was valued at $601.9 million, an increase of 11 percent over 1969 and another record high for the State. Projection of annual figures for 1971, however, indicates a decrease to $532.5 million according to the U. S. Bureau of Mines.

Metal commodities value in 1970 was 17 percent more than in 1969 largely because of increases in copper, iron ore, lead and uranium. In 1970, beryllium was produced for the first full year and manganese ore was produced for the first time since 1954.

Mineral fuels production increased 5 percent in total value. Bituminous coal rose markedly, but other mineral fuels declined. Nonmetals decreased; output for two of the fifteen commodities, fluorspar and phosphate rock, rose substantially, but potassium salts and salt recorded decreases. This resulted in a 17-percent decrease in the nonmetals group.

Preliminary annual U. S. Bureau of Mines figures show Utah's mineral production valuation in 1971 reversed the upward trend in progress since 1968 by falling 12 percent to $532.5 million. Production in the metals group decreased 18 percent mainly because of a strike in the Utah copper industry. Increases in value, however, were recorded in the mineral fuels and nonmetals group.

Gold in 1971 registered a 3-percent increased value as a result of a higher unit price. Value of copper and iron ore production each declined 17 percent and uranium 8 percent. Decreased values were registered for zinc (20 percent), silver (24 percent), lead (25 percent) and molybdenum (26 percent). Production of mineral fuels rose 2 percent with increases in asphalt and petroleum offsetting a decrease in bituminous coal.

Substantial gains in values for magnesium compounds, potassium salts and sodium sulfate contributed to the 14-percent rise in value of the nonmetal group in 1971.

The Bureau of Land Management administers 43.14 percent of the 52,696,960 acres comprising Utah lands, or 22,735,168 acres. Largest contributor of receipts from BLM-administered lands and resources during fiscal 1971 came from the Mineral Leasing Act of 1920: $9,264,164 or 90.7 percent of the total $10,212,137. Income from mineral leases and permits consistently accounts for more than 90 percent of the receipts; it reached a high in 1962 when nearly 96 percent was from the receipts. Cash receipts for all minerals in fiscal 1971 were $9,264,164 and payments to the State of Utah from public land revenues for mineral leases were $3,477,509–highest since 1965.

Division of State Lands reports a gross principal receipt of $724,587 royalty and a gross interest receipt of $1,597,009 on mineral-lease rental as of June 30, 1971. The State has a total of 2,100,767 acres under lease with the largest amount, 1,074,100 acres, being oil and gas leases. Metallic minerals include 215,717 acres, nonmetallic minerals, 63,549 acres, bituminous sands, 146,582 acres, salt, 288,117 acres, coal, 86,726 acres and oil shale, 225,975 acres.

Note: Federal and state mineral statistics related to leasing and royalties are maintained on a fiscal year basis; data apply to the fiscal

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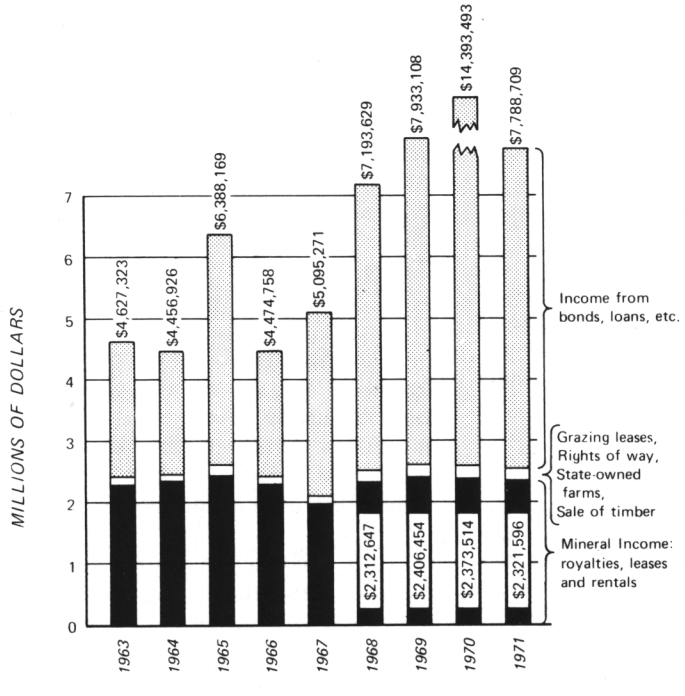
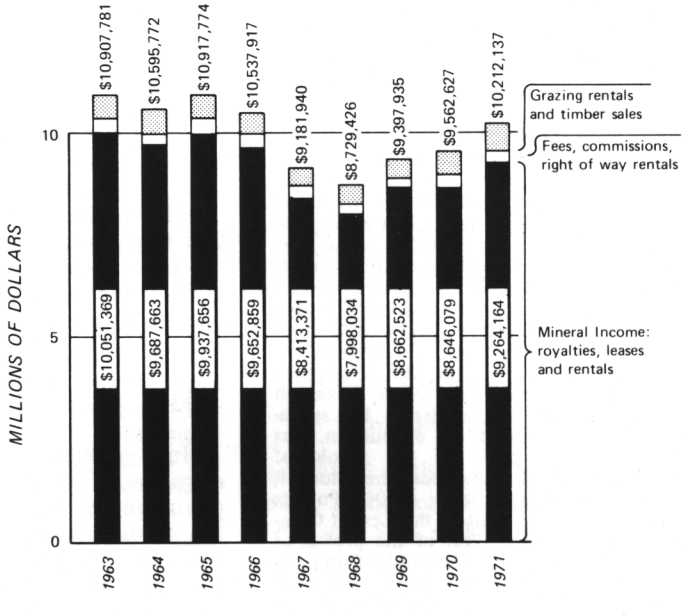


ANNUAL INCOME FROM STATE-OWNED LANDS, 1963–1971
FROM DIVISION OF STATE LANDS



RENTALS AND FEES FROM FEDERAL LANDS IN UTAH, 1963–1971
FROM U. S. BUREAU OF LAND MANAGEMENT

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year July 1, 1970 to June 30, 1971. U. S. Bureau of Mines reports, however, are on a calendar year basis. Mineral production and values by county for 1970 are listed below (for a comparison with 1969 figures, see the February 1971 *Quarterly Review*, v. 5, no. 1, p. 9).

Information for this report was derived from the following sources: U. S. Bureau of Mines 1970 Annual Yearbook data and additional information released to UGMS by the USBM; Public Land Statistics, 1970, Bureau of Land Management; BLM Facts and Figures for Utah, 1971 and Utah Division of State Lands fiscal report, July 1, 1970 to June 30, 1971.

Commodity	Value	Quantity
BEAVER COUNTY		
Gold	(9)	(9)
Silver	(9)	(9)
Copper	(9)	(9)
Lead	(9)	(9)
Zinc	(9)	(9)
Pumice	W[1]	W
Sand and gravel	W	W
Perlite	W	W
Total	(9)	
BOX ELDER COUNTY		
Lime	W	W
Salt	W	W
Sand and gravel	$ 343,000	547,000 s. t.[2]
Stone	311,000	W
Total	$ 654,000	
CACHE COUNTY		
Lime	W	W
Sand and gravel	$ 317,000	366,000 s. t.
Stone	W	W
Total	$ 317,000	
CARBON COUNTY		
Carbon dioxide	W	W
Coal	$ 18,368,810	3,349,000 s. t.
Natural gas	W	W
Sand and gravel	W	W
Total	$ 18,368,810	
DAGGETT COUNTY		
Natural gas	$ 117,966[4]	739 m. c. f.[4]
Petroleum	8,000	3 t. b.[5]
Sand and gravel	W	W
Stone	W	W
Total	$ 125,966	
DAVIS COUNTY		
Sand and gravel	$ 911,000	919,000 s. t.
Total	$ 911,000	
DUCHESNE COUNTY		
Natural gas	$ 43,898	278 m. c. f.
Petroleum	5,439,720	1,952 t. b.
Sand and gravel	491,000	840,000 s. t.
Stone	W	W
Total	$ 5,974,618	
EMERY COUNTY		
Coal	$ 6,040,510	1,292,000 s. t.
Natural gas	W	W
Petroleum	21,786	4 t. b.
Sand and gravel	817,000	616,000 s. t.
Uranium, U_3O_8	89,000[10]	14,760 lb.
Vanadium	W	W
Total	$ 6,968,296	
GARFIELD COUNTY		
Gold	(9)	(9)
Silver	(9)	(9)
Copper	(9)	(9)
Lead	(9)	(9)
Zinc	(9)	(9)
Petroleum	$ 2,288,462	1,601 t. b.
Sand and gravel	W	W
Uranium, U_3O_8	—	—
Vanadium	W	W
Total	$ 2,288,462	
GRAND COUNTY		
Natural gas	$ 880,975	5,564 m. c. f.
Petroleum	301,000	158 t. b.
Potassium salts	W	W
Sand and gravel	571,000	618,000 s. t.
Uranium, U_3O_8	377,000	63,760 lb.
Vanadium	W	W
Total	$ 2,129,975	

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Minerals activity on federal lands in Utah,
July 1, 1970, to June 30, 1971 (U. S. Bureau of Land Management)

Commodity	Mineral Permits and Licenses		Mineral Leases		Production	Receipts	
	Number	Acres	Number	Acres		Leases, Permits	Royalties
Petroleum					11,200,470 bbls		
Natural gas	1,609	2,122,613	14,846	8,931,477	25,022,196 Mcf	$8,012,149	$4,445,932
Oil and gas liquids					55,199,106 gals		
Coal	11	24,908	246	419,284	2,169,456 s. t.	536,089	411,612
Other						34,281	30,653
Potash	4	4,350	52	96,696		48,533	30,329
Phosphate	2	1,593	20	28,737		15,027	8,186
Gilsonite and bituminous sands	0	0	20	11,788			
Totals	1,626	2,153,464	15,184	9,487,982		$8,646,079	$4,926,712
(7-1-69 to 6-30-70)	1,770	2,527,879	14,598	8,138,324		$8,648,918	$4,750,084

Total receipts from leases and permits on public lands in fiscal year 1971, includes royalties on federal leases collected by U. S. Geological Survey: $9,264,164.

Allocation of BLM receipts to state of Utah for mineral leases and permits: $3,536,148.

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IRON COUNTY

Coal	W	W
Iron ore	$ 12,552,000	1,921,000 l. t.[6]
Pumice	W	W
Sand and gravel	187,000	207,000 s. t.
Stone	W	W
Total	$ 12,739,000	

JUAB COUNTY

Gold	(9)	(9)
Silver	(9)	(9)
Copper	(9)	(9)
Lead	(9)	(9)
Zinc	(9)	(9)
Clays	W	W
Fluorspar	$ 207,000	6,667 s. t.
Sand and gravel	30,000	45,000 s. t.
Stone	W	W
Total	$ 237,000	

KANE COUNTY

Coal	W	W
Sand and gravel	W	48,000 s. t.
Total	(9)	

MILLARD COUNTY

Sand and gravel	$ 38,000	49,000 s. t.
Stone	W	W
Total	$ 38,000	

MORGAN COUNTY

Cement, masonry and portland	W	W
Sand and gravel	(9)	(9)
Stone	W	W
Total	(9)	

PIUTE COUNTY

Gold	(9)	(9)
Silver	(9)	(9)
Copper	(9)	(9)
Lead	(9)	(9)
Zinc	(9)	(9)
Clays	W	W
Sand and gravel	$ 6,000	3,000 s. t.
Uranium, U_3O_8	W	W
Total	$ 6,000	

RICH COUNTY

Phosphate rock	W	W
Sand and gravel	$ 130,000	210,000 s. t.
Total	$ 130,000	

SALT LAKE COUNTY

Gold	$ 12,870,815	353,691 t. o.[3]
Silver	6,291,949	3,553,127 t. o.
Copper	338,307,360	293,161 s. t.
Lead	5,816,094	18,619 s. t.
Zinc	3,282,770	10,715 s. t.
Cement, portland	W	W
Lime	W	W
Clays	W	W
Molybdenum	W	W
Salt	W	W
Sand and gravel	3,677,000	3,979,000 s. t.
Stone	393,000	242,000 s. t.
Tungsten, 60 percent WO_3	6,000	3 s. t.
Total	$370,644,988	

SAN JUAN COUNTY

Gold	W	W
Silver	W	W
Copper	$ 349,541	303 s. t.
Lead	W	W
Zinc	W	W
LP gas	W	W
Natural gas	3,179,000	20,124 m. c. f.
Natural gasoline	W	W
Petroleum	36,211,000	12,436 t. b.
Sand and gravel	49,000	20,000 s. t.
Uranium, U_3O_8	9,557,000[10]	1,556,059 lb.
Vanadium	W	W
Total	$ 49,345,541	

SANPETE COUNTY

Clays	W	W
Natural gas	W	34 m. c. f.
Salt	W	W
Sand and gravel	W	W
Total	W	

SEVIER COUNTY

Gold	(9)	(9)
Silver	(9)	(9)
Copper	(9)	(9)
Lead	(9)	(9)
Zinc	(9)	(9)
Clays	W	W
Coal	W	79,000 s. t.
Gypsum	W	W
Salt	$ 481	4,439 s. t.
Sand and gravel	343,000	508,000 s. t.
Total	$ 343,481	

SUMMIT COUNTY

Gold	$ 26,129	718 t. o.
Silver	564,876	318,991 t. o.
Copper	97,572	85 s. t.
Lead	1,027,387	3,289 s. t.
Zinc	1,344,243	4,388 s. t.
Clays	W	W
Coal	W	13,000 s. t.
Natural gas	79,000	502 m. c. f.
Petroleum	3,321,000	1,001 t. b.
Pyrites	W	W
Sand and gravel	W	W
Stone	518,000	113,000 s. t.
Total	$ 6,978,207	

TOOELE COUNTY

Gold	$ 4,621	127 t. o.
Silver	238,115	134,466 t. o.
Copper	153,251	133 s. t.
Lead	434,271	1,390 s. t.
Zinc	296,560	968 s. t.
Clays	W	W
Lime	W	W
Magnesium chloride	W	W
Pyrites	W	W
Salt	W	W
Sand and gravel	807,000	1,062,000 s. t.
Stone	825,000	W
Potassium salts	W	W
Total	$ 2,758,818	

UINTAH COUNTY

Gilsonite	W	W
LP gases	W	W
Natural gas	$ 2,755,000	17,428 m. c. f.
Natural gasoline	W	W
Petroleum	17,890,000	6,265 t. b.
Phosphate rock	W	W
Sand and gravel	W	W
Total	$ 20,645,000	

UTAH COUNTY

Gold	(9)	(9)
Silver	(9)	(9)
Copper	(9)	(9)
Lead	(9)	(9)
Zinc	(9)	(9)
Clays	W	W
Lime	W	W
Sand and gravel	$ 152,000	265,000 s. t.
Stone	W	W
Total	$ 152,000	

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WASATCH COUNTY

Gold	$ 1,849,303	50,819 t. o.
Silver	993,805	561,212 t. o.
Copper	1,214,297	1,052 s. t.
Lead	1,628,031	5,212 s. t.
Zinc	988,550	3,227 s. t.
Sand and gravel	166,000	83,000 s. t.
Stone	W	W
Total	$ 6,829,986	

WASHINGTON COUNTY

Gold	W	W
Silver	W	W
Copper	W	W
Petroleum	(7)	(7)
Sand and gravel	$ 81,000	83,000 s. t.
Total	$ 81,000	

WAYNE COUNTY

Sand and gravel	$ 220,000	219,000 s. t.
Uranium, U_3O_8	W	W
Total	$ 220,000	

WEBER COUNTY

Sand and gravel	$ 397,000	468,000 s. t.
Stone	W	W
Total	$ 397,000	

Undistributed[1 & 9]		
Gold	$ 97,307	2,674 t. o.
Silver	2,588,833	1,461,941 t. o.
Copper	1,159,713	1,006 s. t.
Lead	5,268,929	16,868 s. t.
Zinc	4,715,572	15,391 s. t.
Sand and gravel	854,000	707,000 s. t.
Stone	2,273,000	1,295,000 s. t.
Gem stones	85,000	W
Undisclosed values	75,670,498	
Total	92,712,852	
GRAND TOTAL	$601,997,000	

[1] W=Withheld to avoid disclosing individual company confidential data; values are included in county totals. County totals that have been withheld to avoid disclosing individual company confidential data are included with "undistributed."

[2] s. t.=short tons.

[3] t. o.=troy ounces.

[4] m. c. f.=million cubic feet.

[5] t. b.=thousand barrels.

[6] l. t.=long tons.

(7) Less than ½ unit.

[8] Includes county values indicated by symbol "W" and gem stones that cannot be assigned to specific counties.

(9) Production of Beaver, Garfield, Grand, Juab, Piute, Utah and Wayne counties combined to avoid disclosing individual company confidential data.

[10] Value estimated, based on $5.78 per pound for sales to the Atomic Energy Commission and an assumed price of $6.20 per pound for commercial sales; includes value of U_3O_8 obtained from Utah ores processed at out-of-state mills. Emery and Garfield counties combined.

Mineral Production in Utah in 1970 and 1971.

Mineral	1970[1] Quantity	1970[1] $ Value (thousands)	1971[2] Quantity	1971[2] $ Value (thousands)
Carbon dioxide (natural) thousand cubic feet	60,754	$ 4	60,000	$ 4
Clays thousand short tons	189	1,237	209	1,141
Coal (bituminous) do	4,733	34,472	4,320	31,968
Copper (recoverable content of ores, etc.) short tons	295,738	341,282	270,300	281,653
Fluorspar do	19,214	595	3,168	107
Gem stones	NA	85	NA	85
Gold (recoverable content of ores, etc.) troy ounces	408,029	14,849	374,400	15,350
Iron ore (usable) thousand long tons, gross weight	1,990	13,837	1,650	11,468
Lead (recoverable content of ores, etc.) short tons	45,377	14,175	38,700	10,681
Lime thousand short tons	186	3,756	183	3,564
Manganiferous ore (5 to 35 percent Mn) short tons	700	W	–	–
Natural gas (marketed) million cubic feet	42,781	6,460	40,450	6,148
Petroleum (crude) thousand 42-gallon barrels	23,370	65,603	23,400	70,902
Pumice thousand short tons	W	18	W	W
Salt do	366	3,638	512	4,505
Sand and gravel do	12,010	10,439	12,430	10,817
Silver (recoverable content of ores, etc.) thousand troy ounces	6,030	10,678	5,251	8,071
Stone thousand short tons	1,650	4,320	1,551	4,147
Tungsten concentrate (60 percent WO_3 basis) short tons	W	W	W	W
Uranium (recoverable content U_3O_8)[3] thousand pounds	1,635	10,023	1,468	9,248
Vanadium short tons	257	W	W	W
Zinc (recoverable content of ores, etc.) do	34,688	10,628	26,300	8,468
Value of items that cannot be disclosed: Asphalt and related bitumens, beryllium concentrate (1970), cement, gypsum, magnesium compounds, molybdenum, natural gas liquids, perlite, phosphate rock, potassium salts, sodium sulfate (1970), and values indicated by symbol W	XX	55,899	XX	54,140
TOTAL	XX	$601,998[4]		$532,467

[1] Production as measured by mine shipments, sales or marketable production (including consumption by producers). Final U. S. Bureau of Mines tabulations.

[2] USBM Mineral Industry Surveys 1971 Preliminary Report.

[3] Value estimated based on $5.78 (1970) per pound for sales to the Atomic Energy Commission and assumed price of $6.20 (1970) and $6.30 (1971) per pound for commercial sales; included value of U_3O_8 obtained from Utah ores processed at out-of-State mills.

[4] Revised. NA Not available. W Withheld to avoid disclosing individual company confidential data; included with "Value of items that cannot be disclosed." XX Not applicable.

(continued from page 3)

corresponds to the actual volume of England's foreign investments at various dates, and would actually amount today to the total of 4 Billion Pounds which I have already quoted as being what our foreign investments now are. Thus, every Pound which Drake brought home in 1580 has now become One Hundred Thousand Pounds. Such is the power of compound interest!

Perhaps a United States economist will sometime venture an appraisal of the current value of our past mineral production. Meanwhile, we want to make a couple of points about the present.

Mining Dollar vs. Tourist Dollar

In our states we are concerned with promoting tourism with its obvious economic benefits. Without deprecating the tourist dollar, we might compare it with the mining dollar. When a resident of one city in a state spends a dollar in another city in that state, the total number of dollars in the state remains the same. It is good to have dollars circulate, but although the GNP may go up a dollar, no dollars have been created through the exchange. Similarly, when a resident of one state spends a dollar in another state, one state has gained and the other has lost a dollar, but the nation has no more dollars than it had. But, if a dollar's worth of gold is mined from the ground, the nation is a dollar richer, and similarly with other metals and minerals.

Anticipating that the preceding paragraph would not go unchallenged, the Council submitted it for criticism to more knowledgeable authorities. The only adverse comment we have is from the senior economist of a Federal Reserve Bank, who said, "Bringing in people to see and enjoy the beauty of nature—tourism—would be classed as productive enterprise." We have previously acknowledged that all productive labor helps build the wealth of nations, but also that such labor must have a foundation on which to build. We believe our statement about the dollars involved is valid, but we are mindful of a comment attributed to Baron Rothschild, who said, "I only know two men who really understand money," and then added, "Unfortunately, they disagree."

Tax Benefits To Public

One other point is prompted by a rash statement made at a public hearing last year, to-wit; "The timber interests get the timber, the grazing interests get the grazing, the mining interests get the minerals and the general public gets nothing." There are several obvious things which the public gets from mining, such as raw materials needed in almost everything we use, plus jobs, not only in mining but in other industries which mining makes possible, and the injection of new money, with accumulation of capital to help sustain the economy, but there is one additional great benefit to the public, which, apparently, has not been expounded before.

It is often overlooked that the public is a 50-percent partner in every corporation's profits, through federal income taxes levied for public purposes. But, that's only a beginning. Add all tax increments, such as production, property, payroll, fuel, state, county and school district taxes; taxes paid by employees and stockholders; pro-rated taxes paid by supply and service companies and their employees, and the total taxes available for public purposes is much greater than the total profit, and for most mining companies is 30 to 40 percent of the total value of the production. But, more yet. Granting that money in circulation turns over three or four times a year, and there are estimates up to eight, a significant conclusion is obvious. Within a year after a dollar of new minerals is produced, a dollar in taxes has accrued for the benefit of the public. That is worth reiterating. *Each dollar of mine production creates, within a year, a dollar for the public, just through taxes.* That happens before additional increments for transportation, manufacturing, assembling, wholesaling and retailing of final products, with innumerable taxes levied on pyramiding values all along the line. The public is the greatest beneficiary of mining operations.

(Conclusion in next issue of *Quarterly Review*)

QUARTERLY REVIEW

State of Utah . . . . . *Calvin L. Rampton, Governor*
University of Utah . . . . . *Alfred C. Emery, President*
College of Mines & Mineral Industries . . . . . *George R. Hill, Dean*
Utah Geological & Mineralogical Survey . . . . . *William P. Hewitt, Director*

UTAH GEOLOGICAL AND MINERALOGICAL SURVEY
103 Utah Geological Survey Building
University of Utah
Salt Lake City, Utah
84112

UTAH
GEOLOGICAL AND MINERALOGICAL SURVEY
103 Utah Geological Survey Building
THE UNIVERSITY OF UTAH
SALT LAKE CITY, UTAH 84112

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